Bull. Mus. natl. Hist. nat., Paris, 4e sér., **17**, 1995
n° 1-2 : 201-210.

Two new species of *Nanocassiope* from the Western Pacific (Crustacea, Brachyura, Xanthidae)

by Peter J. F. DAVIE

Abstract. — Two new species of *Nanocassiope* Guinot, 1967, are described, *N. oblonga* from French Polynesia, and *N. tridentata* from Indonesia. This brings to six the number of species attributed to the genus, with four found in the Indo-West Pacific region.

Keywords. — Crustacea, Decapoda, Brachyura, Xanthidae, *Nanocassiope*, Pacific, Indonesia, French Polynesia, new species.

Deux nouvelles espèces de *Nanocassiope* de l'Indo-Pacifique (Crustacea, Brachyura, Xanthidae)

Résumé. — Deux nouvelles espèces de *Nanocassiope* Guinot, 1967 sont décrites : *N. oblonga* de Polynésie française et *N. tridentata* d'Indonésie. Six espèces sont donc attribuées à ce genre dont quatre ont été récoltées dans l'Indo-Pacifique occidental.

Mots-clés. — Crustacea, Decapoda, Brachyura, Xanthidae, *Nanocassiope*, Pacifique, Indonésie, Polynésie française, espèce nouvelle.

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INTRODUCTION

The present study was initiated by the discovery of what appeared to be a new *Nanocassiope* Guinot, 1967, species amongst xanthid crab collections made by J. POUPIN of the French Service Mixte de Contrôle Biologique (SMCB). The collections were made from the F. R. V. *Marara* which conducted biological surveying throughout French Polynesia. The present specimens of this new species were collected by dredge on the outer slopes of the islands in depths ranging from 100 to 200 m. Deep water xanthid species collected from this region by trapping have been previously reported by Davie (1993).

While examining comparative specimens held at the MNHN, a single male specimen of a further new species was discovered that had been collected by the Rumphius I Expedition from the vicinity of Ambon, Indonesia (see ROMIMOHTARTO, 1974). The opportunity was therefore taken to describe both species at the same time.

Abbreviations used in the text are: mm, millimetres; G1, G2, first and second male gonopods; MNHN, Muséum national d'Histoire naturelle, Paris; QM, Queensland Museum, Brisbane. The

abbreviated terminology used for carapace regions is that used by SERÈNE (1984) following DANA (1852). Measurements given in the text are of carapace breadth (c.b.) followed by length.

Family XANTHIDAE MacLeay, 1838
XANTHINAE MacLeay, 1838

Nanocassiope Guinot, 1967

Nanocassiope Guinot, 1967: 355-358; 1971: 1075. – SAKAI, 1976: 433. – SERÈNE, 1984: 209.

DIAGNOSIS

Carapace broad, moderately convex, distinctly areolated with the protogastric, mesogastric and hepatic regions, and epigastric lobes, separated by distinct grooves. Anterolateral border usually with four teeth behind exorbital angle; second and third teeth prominent, third tooth in particular most laterally pointed; fourth tooth more or less developed; anterolateral border granular with first tooth connected to exorbital angle by crest, but also with clusters or rows of granules passing ventrally. Front wide, straight or slightly convex, with long submarginal granular crest. Anterior border of the buccal cavity with sharp, sinuous rim, with distinct lateral fissures. Endostomial crests incomplete; lacinie of first maxilliped very short transversely, such that distant from median line, with anterior border incurved, and advanced little in front of prelabial space. Chelipeds very unequal, large claw rather massive and with fingers short; small claw thinner with cutting margins sharp, very elongated, pointed and with tips crossing. Ambulatory legs long and narrow. Sternal plastron with episternites having convex latero-external border. Male abdomen short, broad. Male G1 stocky, incurved and twisted, with spiniform tubercles extending over half length, and with apical bouquet of long and strong incurved setae. (Modified after GUINOT, 1967).

REMARKS

Nanocassiope Guinot (1967) now contains six species: the type of the genus, *N. melanodactylus* (A. Milne Edwards, 1867) from the tropical and subtropical eastern Atlantic; *N. polita* (Rathbun, 1893) from the Pacific coast of America; *N. alcocki* (Rathbun, 1902) from the western Indian Ocean; *N. granulipes* (Sakai, 1939) from Japan and questionably from South Africa; *N. oblonga* sp. nov. from French Polynesia; and *N. tridentata* sp. nov. from Indonesia.

Nanocassiope oblonga sp. nov.
(Fig. 1)

TYPE MATERIAL. — The single male (MNHN-B22782) is the holotype, the three females, paratypes.

MATERIAL EXAMINED. — French Polynesia. SMCB (J. POUPIN): Marquises Islands: Eiao, Stn D74, 7°59.81'S, 140°45.23'W, dredged, 155 m, 19.01.1991: 1 ♂ 4.7 × 3.0 mm, holotype (MNHN-B22782). *Ibidem*: 1 ♀ 4.3 ×

2.7 mm, paratype (MNHN-B22783). *Ibidem*: 1 ♀ 3.8 × 2.4 mm, paratype (QM). Nuku Hiva, Stn D83, 8°47.60'S, 140°05.00'W, dredged, 140 m, 25.01.1991: 1 ovig. ♀ 4.5 × 2.8 mm, paratype (MNHN-B22784).

ETYMOLOGY. — Named in reference to the very wide carapace.

DISTRIBUTION. — Only recorded from French Polynesia. Bathymetric range: 140-155 m.

DESCRIPTION

Carapace transversely ovoid, *c.* 1.57-1.61 times broader than long; conspicuously granular over anterior half, receding posterolaterally; without setae; convex anteriorly, more or less flat from side to side across postero-branchial regions, but depressed near lateral margin. Regions poorly indicated, mostly marked by shallow smooth grooves; 1F and 2F confluent, swollen, coarsely granular; 1M marked anteriorly by row of coarse granules, confluent with inner branch of 2M; 2M broad, divided anteriorly by short groove, outer branch also with raised granular row; anterior prolongation of 3M clearly marked, narrow, posteriorly 3M less clearly marked; 4M not separated; 1L not defined; 2L, 3L, 4L and 5L confluent, with raised granular row anteriorly; 6L not defined; 1R, 2R confluent, with raised anterior granular row; 1P and 2P separated by short, indistinct, cardio-intestinal groove. Anterolateral border of carapace divided into four granular teeth; first tooth clearly separated from exorbital angle, lower than second and third; second slightly larger than third, anteriorly directed; third more laterally directed; fourth tooth very small. Greatest carapace width across third teeth. Posterolateral border markedly convergent, straight or slightly convex, longer than anterolateral. Posterior border costate. Front not produced, divided into two slightly convex lobes by small median notch; laterally clearly separated from supra-orbital angles. Supra-orbital border granular; median and lateral fissures closed, inconspicuous. Infra-orbital border granular, with broad triangular tooth at inner end visible dorsally; deep broad notch below exorbital angle. Eyestalk with 2-3 strong tubercles on edge of cornea, and low tubercle on extension over cornea. Basal antennal segment minutely granular, in contact with ventral prolongation of front; flagellum slightly longer than width of orbit. Basal segment of antennule granular laterally, with moderately strong ridges on superior and lateral margins, flagellum folding obliquely.

Third maxilliped: merus *c.* 0.6 times length of ischium, wider than long, anteroexternal angle moderately produced, bluntly rounded, surface granular; ischium *c.* 1.6 times longer than wide.

Chelipeds noticeably unequal, right largest and stoutest. Merus of right cheliped minutely granular on outer face, upper border coarsely granular, without subterminal or terminal teeth. Carpus rounded, with coarse granular striations, bearing a strong triangular tooth at inner angle. Palm high, height *c.* 0.5 times length (including fixed finger); coarsely granulated, size diminishing ventrally; broad shallow depression before median longitudinal granular crest on upper margin; inner proximal margin with 2-3 larger granular tubercles; immoveable finger relatively long, ventral sub-marginal groove, cutting edge with largest tooth proximo-medially. Dactyl with clearly defined, relatively sharp, longitudinal ridge forming entire superior margin; cutting margin with low teeth increasing in size proximally, and larger, blunt, outwardly and backwardly projecting molar basally. Left cheliped of same form but fingers thinner and cutting margins sharper; dactyl lacking basal molar. Fingers of both chelae tan coloured on one female, not obviously coloured on other specimens.

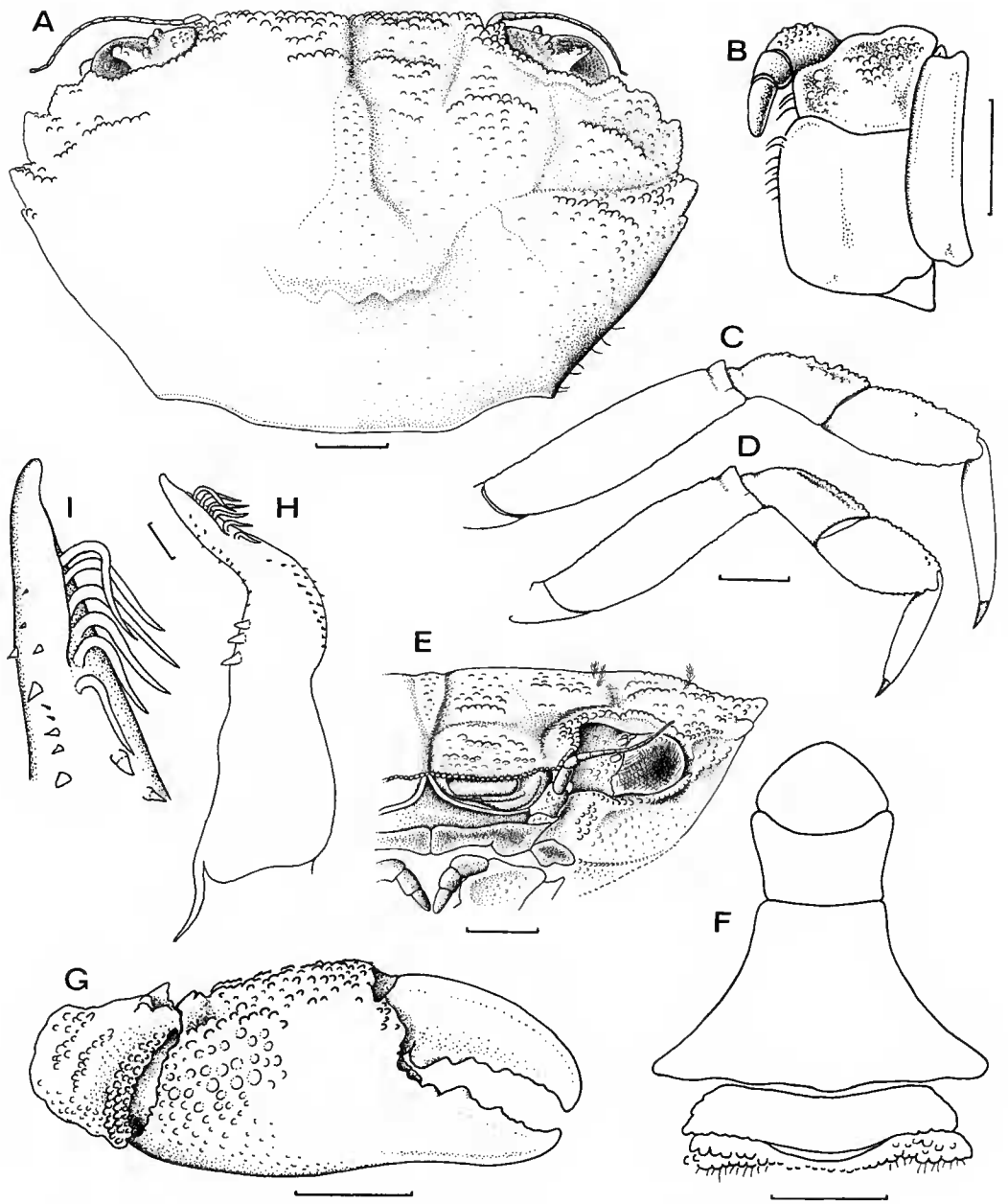

FIG. 1. — *Nanocassiope oblonga* sp. nov., Eiao, Marquises Islands, French Polynesia, holotype, 4.7 × 3.0 mm (MNHN-B22782): A, dorsal carapace; B, third maxilliped; C, third walking leg; D, fourth walking leg; E, frontal view of epistome and infra-orbital margin; F, abdomen; G, right chela; H, I, first gonopod. Scale lines: A-F = 0.5 mm, G = 1 mm, H = 0.1 mm.

Nanocassiope oblonga *sp. nov., Eiao, îles Marquises, Polynésie française, holotype, mâle 4,7 × 3,0 mm (MNHN-B22782) : A, carapace, vue dorsale ; B, troisième maxillipède ; C, troisième patte ambulatoire ; D, quatrième patte ambulatoire ; E, vue frontale de l'épistome et bord infra-orbitaire ; F, abdomen ; G, pince droite ; H, I, premier pléopode. Échelles : A-F = 0,5 mm, H = 0,1 mm.*

Walking legs of medium length, second pair slightly the longest, *c.* 1.1 times carapace width. Margins of meri, carpi, and propodi sharply, and distinctly granulated. Third leg: merus *c.* 3.3 times longer than wide; carpus *c.* 2.3 times longer than wide; propodus 2.5 times longer than wide; dactylus *c.* 1.1 times longer than propodus.

Sternum with groove separating fused sternites 3/4 strongly incised laterally, but not apparent across most of width; long longitudinal fissure on sternite 4. Male abdomen smooth; segment 3-5 fused; telson broadly rounded, *c.* 1.5 times wider than long, deeply sunken into segment 6, subequal in length to lateral border of sixth; sixth segment with lateral margins convergent towards base, *c.* 1.6 times wider than long (measured at widest and longest points); third segment the widest, laterally triangular. G1 as figured; three strong, broad, spines medially on inner margin.

REMARKS

Nanocassiope oblonga sp. nov. is most closely allied to *N. alcocki* (Rathbun, 1902) from which it can be separated by the following characters:

1) the first anterolateral tooth is broader, lower, and less acute;

2) the fourth anterolateral tooth is much reduced and placed on the posterolateral margin, whereas on *N. alcocki* it is prominent, broad, and only a little smaller than the third;

3) the anterolateral margins are generally less granular;

4) the outer face of the major chela is granular over most of its surface, whereas on *N. alcocki* the ventral face is smooth;

5) the shape and pattern of setation on the male G1 is different, especially by *N. oblonga* having a longer, less twisted, apex (*cf.* fig.1H with GUINOT, 1967: fig. 12a,b);

6) it is apparently a smaller species with one female being ovigerous at 4.5 mm c.b., and the largest specimen, the male, being only 4.7 mm across; *N. alcocki* reaches 26 mm across the carapace.

Nanocassiope tridentata sp. nov.
(Fig. 2)

Nanocassiope orientalis Serène, Romimohtarto & Moosa, 1974: 22 (non *Microcassiope orientalis* Takeda and Miyake, 1969: 201).

TYPE MATERIAL. — Holotype is the unique male available for study.

MATERIAL EXAMINED. — Indonesia, Ambon Bay, Rumphius Expedition I: Cruise 3, Stn D19, dredged, bottom of coarse sand and stones, 25.01.1973: 1 ♂ 4.2 × 2.9 mm, holotype (MNHN-B10015).

ETYMOLOGY. — Name refers to the presence of only three obvious anterolateral teeth behind the exorbital angle, which helps to distinguish the species.

DISTRIBUTION. — Only known from the type locality, in the waters near Ambon, Indonesia.

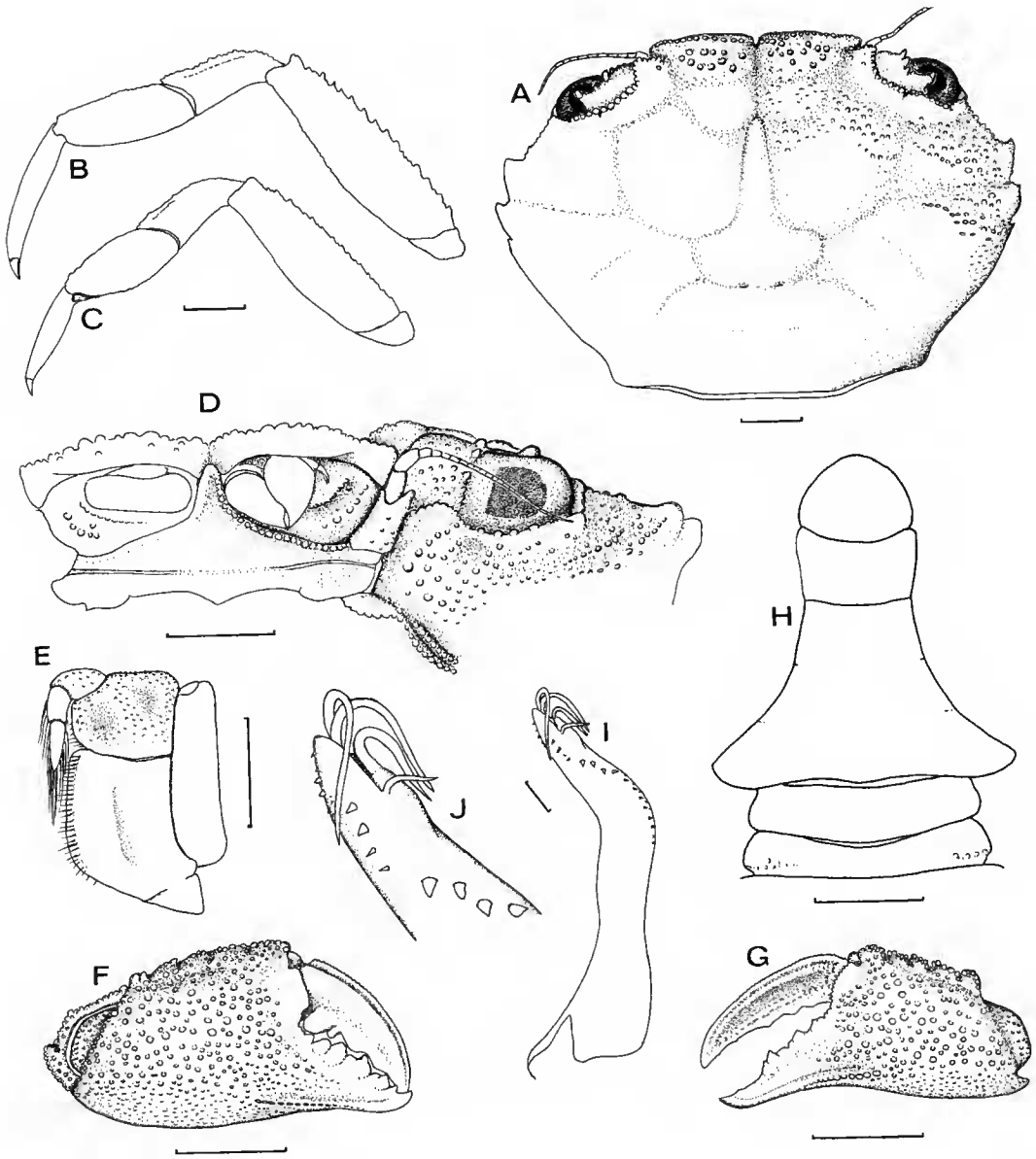

FIG. 2. — *Nanocassiope tridentata* sp. nov. Ambon, Indonesia, holotype – 4.2 × 2.9 mm (MNHN-B10015): A, dorsal carapace; B, third walking leg; C, fourth walking leg; D, frontal view of epistome and infra-orbital margin; E, third maxilliped; F, right chela; G, left chela; H, male abdomen; I, J, first gonopod. Scale lines: A-E, F = 0.5 mm; F, G = 1 mm; H = 0.1 mm.

Nanocassiope tridentata *sp. nov., Ambon, Indonésie, holotype, mâle, 4,2 mm × 2,9 mm (MNHN-B10015) : A, carapace, vue dorsale ; B, troisième patte ambulatoire ; C, quatrième patte ambulatoire ; D, troisième maxillipède ; E, vue frontale de l'épistome et bord infra-orbitaire ; F, abdomen ; G, pince droite ; H, I, premier pléopode. Échelles : A-E = 0,5 mm, F, G = 1 mm, H = 0,1 mm.*

DESCRIPTION

Carapace *c.* 1.45 times broader than long; conspicuously granular over anterior half, receding posterolaterally; without marked setation; convex anteriorly, more or less flat from side to side across postero-branchial regions. Regions relatively well marked by smooth grooves; 1F and 2F confluent, swollen, coarsely granular; 1M poorly but completely defined; 2M broad, undivided; anterior prolongation of 3M clearly marked, narrow, posteriorly 3M less clearly marked; 4M not separated; 1L not defined; 2L and 3L confluent; 4L and 5L shallowly separated; indistinct, cardio-intestinal groove. Anterolateral border of carapace divided into three granular teeth; first tooth largest, broad, triangular, broadly separated from exorbital angle; second slightly smaller and narrower; third tooth very small. Greatest carapace width across third teeth. Posterolateral border markedly convergent, straight or slightly convex, longer than anterolateral. Posterior border costate. Front not produced, divided into two slightly convex lobes by small median notch; laterally clearly separated from supra-orbital angles. Supra-orbital border granular; median and lateral fissures small but distinct. Infra-orbital border granular, with broad, blunt, triangular tooth at inner end; deep broad notch below exorbital angle. Eyestalk with 2-3 strong tubercles on edge of cornea, and further tubercle on extension over cornea. Basal antennal segment minutely granular, barely in contact with ventral prolongation of front; flagellum about as long as width of orbit. Basal segment of antennule granular laterally, flagellum folding slightly obliquely. Anterior margins of epistome granular.

Third maxilliped: merus *c.* 0.6 times length of ischium, wider than long, anteroexternal angle slightly produced, rounded, surface granular; ischium *c.* 1.3 times longer than wide.

Chelipeds noticeably unequal, right largest and stoutest. Merus of right cheliped granular on outer face, upper border with row of large pointed tubercles separated from broad blunt terminal lobe. Carpus with coarse granular elevations, bearing strong triangular granular tooth at inner angle. Palm high, height *c.* 0.5 times length (including fixed finger); coarsely granulated, size diminishing ventrally; broad shallow depression on upper outer margin before dorsal surface; inner proximal margin with row of larger rounded granules; immoveable finger relatively long, ventral submarginal groove, cutting edge with large teeth. Dactyl with clearly defined, relatively sharp, granulated longitudinal ridge along entire superior margin; cutting margin with low teeth increasing in size proximally, and larger, blunt, outwardly and backwardly projecting molar basally. Left cheliped of same form but fingers thinner and cutting margins sharper; dactyl lacking basal molar. Fingers of both chelae without trace of colouring in preserved specimen.

Walking legs of medium length, third pair *c.* 1.1 times carapace width. Anterior margins of meri and carpi coarsely granulated, forming two broad lobes on each segment. Third leg: merus *c.* 3.3 times longer than wide; carpus *c.* 2.3 times longer than wide; propodus *c.* 2.2 times longer than wide; dactylus *c.* 1.1 times longer than propodus.

Sternum with groove separating fused sternites 3/4 incised laterally, but only broad shallow groove across most of width; long longitudinal fissure on sternite 4. Male abdomen smooth; segment 3-5 fused; telson broadly rounded, *c.* 1.3 times wider than long, moderately sunken into segment 6, *c.* 1.2 times length of lateral border of sixth; sixth segment with lateral margins slightly convergent towards base, *c.* 1.6 times wider than long (measured at widest and longest points); third segment the widest, laterally triangular. G1 relatively narrow; four subapical reflexed stout setae; otherwise as figured.

REMARKS

This specimen was found in the collection of the MNHN with the label carrying the questioned name "*Nanocassiope ? orientalis ?*", with the identifier also questioned as SERÈNE. Indeed, SERÈNE *et al.* (1974) did list this species in the list of identifications of the collection made by the Rumphius Expedition I. On close scrutiny however it is apparent that this preliminary identification is not correct because there are many differences between the two taxa. Most importantly TAKEDA and MIYAKE (1969) described their species in the genus *Microcassiope* Guinot, 1967, and there is no reason to doubt this placement. *Microcassiope orientalis* certainly does not belong to *Nanocassiope*, as it is presently defined, because it lacks the long, stiff, recurved bristles on the male G1 which are so characteristic of all the species of that genus.

Nanocassiope tridentata sp. nov. is most closely related to *N. granulipes* (Sakai, 1939). It differs from that species, and all the other described species, by having only three anterolateral teeth behind the exorbital angle instead of four, the first being vestigial and represented by only one or two slightly raised granules. *N. tridentata* further differs from *N. granulipes* by having the entire outer face of the cheliped palm covered in coarse granules; in the later species the palm is "dorsally slightly carinate and granulated but its external surface near the inferior border is smooth" (SAKAI, 1939: 547). The anterior extension of 3M is narrow, while on *N. granulipes* it is relatively wide and more obviously tapering (cf. SAKAI, 1939: fig. 59). Finally, the male G1 is narrower and less stout than the other described species.

Acknowledgments

I am most grateful to Dr Alain CROSNIER of ORSTOM for asking me to undertake this study. The work was undertaken while at the Laboratoire de Zoologie (Arthropodes), Muséum national d'Histoire naturelle, Paris, under a grant from the Institut français de Recherche Scientifique pour le Développement en Coopération (ORSTOM). The Board of Trustees of the Queensland Museum very kindly helped with travel funds. Allison HILL is thanked for her artwork used to illustrate *N. ovalis*. Danièle GUINOT of the MNHN, Paris, and Paul CLARK of The Natural History Museum, London, both made valuable comments on the manuscript, and to both I am very grateful.

REFERENCES

DANA, J. D., 1852. — Crustacea Part 1. In: *United States Exploring Expedition during the years 1838, 1839, 1840, 1841, 1842 under the command of Charles Wilkes, U.S.N.*, **13** : viii + 1-685. Philadelphia.

DAVIE, P. J. F., 1993. — Deepwater xanthid crabs from French Polynesia (Crustacea, Decapoda, Xanthoidea). *Bull. Mus. natn. Hist. nat.*, Paris, 4^{e} sér., **14,** section A: 501-561, Figs 1-12, Pls 1-13.

GUINOT, D., 1967. — Recherches préliminaires sur les groupements naturels chez les Crustacés Décapodes Brachyoures. II. Les anciens genres Micropanope Stimpson et Medaeus Dana. *Bull. Mus. natn. Hist. nat.*, Paris, 2^{e} sér., **39** (2) : 345-374, fig. 1-42.

— 1971. — Recherches préliminaires sur les groupements naturels chez les Crustacés Décapodes Brachyoures. VIII. Synthèse et bibliographie. *Bull. Mus. natn. Hist. nat.*, Paris, 2^{e} sér., **42** (5), 1970 (1971): 1063-1090.

MACLEAY, W. S., 1838. — On the Brachyurous Decapod Crustacea brought from the Cape by Dr SMITH. P. 63-72, pl. 3. In: Illustrations of the Annulosa of South Africa; being a portion of the objects of natural history collected during an expedition into the interior of South Africa, under the direction of Dr Andrew

SMITH, in the years 1834, 1835, and 1836; fitted out by "The Cape of Good Hope Association for Exploring Central Africa". *Illustr. Zool. S. Africa Invest.*, London: Pl. 14, 75 p.

MILNE EDWARDS, A., 1867. — Descriptions de quelques espèces nouvelles de Crustacés Brachyoures. *Annls Soc. Ent. Fr.*, 4[e] sér., (A2) **7** : 263-288.

RATHBUN, M. J., 1893. — Descriptions of new genera and species of Crabs from the West Coast of North America and the Sandwich Islands. In: Scientific Results of Exploration by the U.S. Fish Commission "Albatross". No XXIX. *Proc. U.S. natl. Mus.*, **16** (933): 223-260.

— 1902. — Crabs from the Maldive Islands. *Bull. Mus. comp. Zool.* Harv., **39** (5): 123-138, 1 Pl.

ROMIMOHTARTO, K., 1974. — Report on the Rumphius Expedition I. Part I. Description of the Expedition. *Oseanologi di Indonesia*, **1**: 1-11.

SAKAI, T., 1939. — Studies on the Crabs of Japan. IV. Brachygnatha, Brachyrhyncha. (Yokendo: Tokyo), p. 365-741, text-Figs 1-129, Pls 42-111, Tables 16.

— 1976. — Crabs of Japan and the Adjacent Seas. (Tokyo: Kodansha). 3 vols, p. i-xxix + 1-773, text Figs 1-379, maps 1-3 (English); p. 1-16, Pls 1-251 (Plates); p. 1-461, text Figs 1, 2 (Japanese).

SERÈNE, R., 1984. — Crustacés Décapodes Brachyoures de l'Océan Indien occidental et de la Mer Rouge, Xanthoidea: Xanthidae et Trapeziidae. Avec un addendum par CROSNIER, A.: Carpiliidae et Menippidae. *Faune Tropicale*. Office de la Recherche Scientifique et Technique Outre-Mer. Paris, **24** : 1-400, fig. A-C, 1-243, pl. 148.

SERÈNE, R., K. ROMIMOHTARTO & M. K. MOOSA, 1974. — Report on the Rumphius Expedition I. Part II. 3. The Hippidea and Brachyura collected by the Rumphius Expedition I. *Oseanologi di Indonesia*, **1**: 17-26.

TAKEDA, M., & S. MIYAKE, 1969. — On two species of the family Xanthidae (Crustacea, Brachyura) from southern Japan. *OHMU* **2** (9): 195-206, Figs 1-3.